

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 - 7 (canceled)

8. (currently amended) A plasma processing method using a plasma processing apparatus having:

a process chamber in which a substrate is subjected to a plasma processing in a batch of the substrates;

a light-receiving part for monitoring a plasma emission in the process chamber;

a spectrometer unit for performing a spectrometry on the received plasma emission to convert the same into a multi-channel signal;

an arithmetic unit for converting the multi-channel signal into one or more output signals and performing an arithmetic operation on the output signals;

a database for storing a filter vector;

a determination unit for determining a condition in the process chamber based on a result of the arithmetic operation, wherein the determination of the condition in the process chamber is a determination that an end point of seasoning is reached; and

an apparatus controller for controlling an operation of the plasma processing apparatus in response to a signal from the determination unit,

the method comprising:

a step of converting the multi-channel signal output from the spectrometer unit into a batch of output signals;

a step (A) of finding differences between the output signals of respective substrates of one batch and the output signals of corresponding respective substrates of a preceding batch;

a step (a B) of determining an average value of the differences ~~in one batch~~ obtained in step (A);

a step (b C) of determining a difference between a maximum and a minimum of the differences ~~in one batch~~ obtained in step (A); and

a step (D) of determining a standard deviation of the differences ~~in one batch~~ obtained in step (A); and

a step (a) of comparing the average value of the differences ~~in one batch~~ obtained in step (B) with a preset threshold;

a step (b) of comparing the difference between the maximum and the minimum of the differences ~~in one batch~~ obtained in step (C) with a preset threshold; and

a step (c) of comparing the standard deviation of the differences ~~in one batch~~ obtained in step (D); with a preset threshold.

9. (currently amended) A plasma processing method using a plasma processing apparatus having:

a process chamber in which a substrate is subjected to a plasma processing in a batch of the substrates;

a light-receiving part for monitoring a plasma emission in the process chamber;

a spectrometer unit for performing a spectrometry on the received plasma emission to convert the same into a multi-channel signal;

an arithmetic unit for converting the multi-channel signal into one or more output signals and performing an arithmetic operation on the output signals;

a database for storing a filter vector;

a determination unit for determining a condition in the process chamber based on a result of the arithmetic operation, wherein the determination of the condition in the process chamber is a determination that an end point of seasoning is reached; and

an apparatus controller for controlling an operation of the plasma processing apparatus in response to a signal from the determination unit,

the method comprising:

a step of performing evacuation after a wet cleaning;

a step of automatically determining whether a degree of vacuum is adequate or not;

a step of automatically determining whether there is an apparatus abnormality or not;

a step of converting the multi-channel signal output from the spectrometer unit into a batch of output signals;

a step (A) of finding differences between the output signals of respective substrates of one batch and the output signals of corresponding respective substrates of a preceding batch;

a step (a B) of determining an average value of the differences ~~in one batch,~~ (b) obtained in step (A);

a step (C) of determining a difference between a maximum and a minimum of the differences ~~in one batch,~~ and (c) obtained in step (A)

a step (D) of determining a standard deviation of the differences ~~in one batch;~~ and obtained in step (A);

a step (a) of comparing the average value of the differences ~~in one batch~~ obtained in step (B) with a preset threshold;

a step (b) of comparing the difference between the maximum and the minimum of the differences ~~in one batch,~~ and obtained in step (C) with a preset threshold; and

a step (c) of comparing the standard deviation of the differences in one batch, obtained in step (D) with a preset threshold.

10. (previously presented) A plasma processing method according to claim 8, wherein the output signals are in the form of principle component scores.

11. (previously presented) A plasma processing method according to claim 10, wherein the principle component scores include at least one of a first principle component, a second principle component, and a third principle component.

12. (currently amended) A plasma processing method according to claim 11, wherein the step (a B) of determining an average value of the differences in one batch, (b) obtained in step (A), the step (C) of determining a difference between a maximum and a minimum of the differences in one batch, and (c) obtained in step (A), and the step (D) of determining a standard deviation of the differences in one batch obtained in step (A), are determined based upon at least one of the first principle component, the second principle component, and the third principle component, of the principle component scores.

13. (currently amended) A plasma processing method according to claim 12, wherein the respective determinations (a B), (b C) and (c D) are effected for the first principle component.

14. (currently amended) A plasma processing method according to claim 12, wherein the respective determinations (a B), (b C) and (c D) are effected for the second principle component.

15. (currently amended) A plasma processing method according to claim 12, wherein the determination (a B), (b C) and (c D) are effected for the third principle component.

16. (previously presented) A plasma processing method according to claim 9, wherein the output signals are in the form of principle component scores.

17. (previously presented) A plasma processing method according to claim 16, wherein the principle component scores include at least one of a first principle component, a second principle component and a third principle component.

18. (currently amended) A plasma processing method according to claim 17, wherein the step (a B) of determining an average value of the differences ~~in one batch~~, ~~(b) obtained in step (A)~~, the step (C) of determining a difference between a maximum and a minimum of the differences ~~in one batch~~, and ~~(c) obtained in step (A)~~, and the step (D) of determining a standard deviation of the differences ~~in one batch obtained in step (A)~~, are determined based upon at least one of the first principle component, the second principle component, and the third principle component, of the principle component scores.

19. (currently amended) A plasma processing method according to claim 18, wherein the determinations (a B), (b C) and (c D) are effected for the first principle component.

20. (currently amended) A plasma processing method according to claim 18, wherein the determinations (a B), (b C) and (c D) are effected for the second principle component.

21. (currently amended) A plasma processing method according to claim 18, wherein the determinations (a B), (b C) and (c D) are effected for the third principle component.